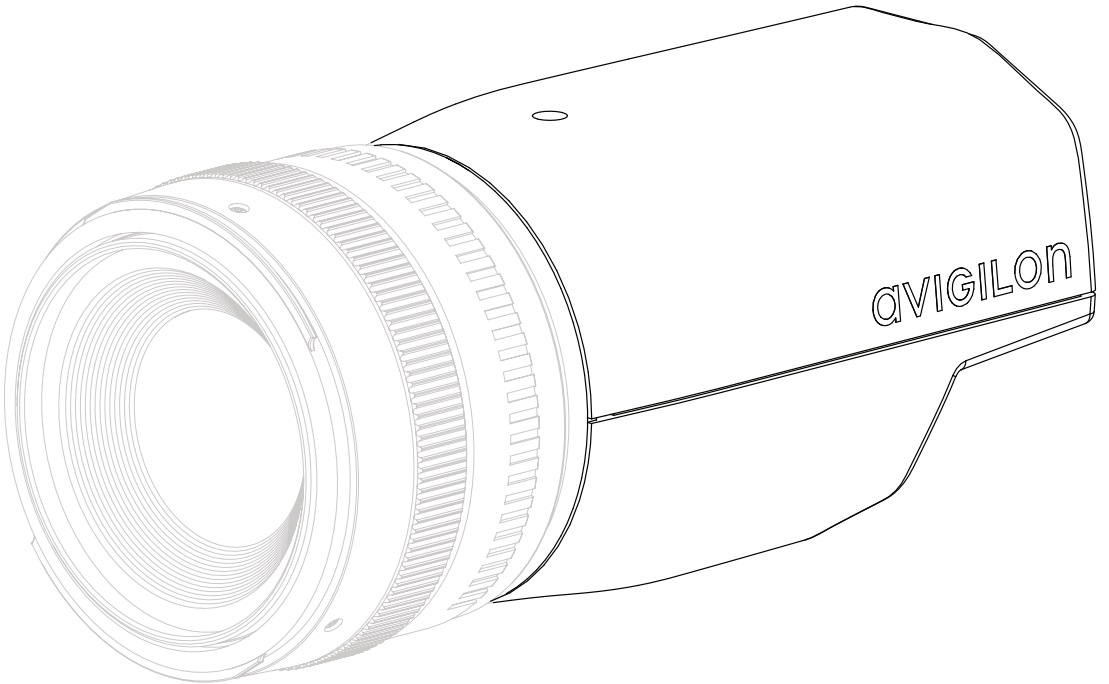
AVIGILON

THE BEST EVIDENCE™



Installation Guide

Avigilon High Definition Professional IP Camera Models:

16L-H4PRO-B, 12L-H4PRO-B and 8L-H4PRO-B

920-0078A-Rev1

use IP

www.use-ip.co.uk

01304 827609

Important Safety Information

This manual provides installation and operation information and precautions for the use of this camera. Incorrect installation could cause an unexpected fault. Before installing this equipment read this manual carefully. Please provide this manual to the owner of the equipment for future use.

The Warning symbol indicates the presence of dangerous voltage within and outside the product enclosure that may constitute a risk of electric shock, serious injury or death to persons if proper precautions are not followed.

The Caution symbol alerts the user to the presence of hazards that may cause minor or moderate injury to persons, damage to property or damage to the product itself if proper precautions are not followed.

Warning — Failure to observe the following instructions may result in severe injury or death.

- Do not use near water or expose to dripping or splashing.
- Do not place objects filled with liquids above the device.
- Do not expose to rain or moisture.
- For indoor use only.
  If used outdoors, an approved outdoor mounting adapter or enclosure is required. Consult with Avigilon for more information.

- Installation must be performed by qualified personnel only, and must conform to all local codes.
- This product is intended to be supplied by a UL Listed Power Unit marked “Class 2” or “LPS” or “Limited Power Source” with output rated 12 VDC or 24 VAC, 10 W min. or Power over Ethernet (PoE), rated 48 VDC, 10 W min.

- Any external power supply connected to this product may only be connected to another Avigilon product of the same model series. External power connections must be properly insulated.
- Do not connect directly to mains power for any reason.

Caution — Failure to observe the following instructions may result in injury or damage to the camera.

- Do not install near any heat sources such as radiators, heat registers, stoves, or other sources of heat.
- Do not subject the cables to excessive stress, heavy loads or pinching.
- Do not open or disassemble the device. There are no user serviceable parts.
- Refer all servicing to qualified personnel.
  Servicing may be required when the device has been damaged (such as from a liquid spill or fallen objects), has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Do not use strong or abrasive detergents when cleaning the device body.
- Use only accessories recommended by Avigilon.
- Use only UL-listed mounting bracket suitable for the mounting surface and minimum 0.4 kg (0.9 lb) weight, plus the weight of the attached lens.
- Avoid leaving the image sensor exposed for extended periods of time. Always cover the image sensor with either a lens or a dust cap.
- Do not allow dust, moisture or any other foreign debris to enter the lens mount.
- Never touch any glass elements inside the lens mount.
- Do not point the lens directly at the sun or other extremely bright objects or damage to the image sensor may occur.
- Use of controls or adjustments or performance of procedures other than those specified in this document may result in hazardous radiation exposure.

Regulatory Notices

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class B digital apparatus complies with Canadian ICES-003.

FCC Notice

This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his/her own expense will be required to take whatever measures may be required to correct the interference.

Changes or modifications made to this equipment not expressly approved by Avigilon Corporation or parties authorized by Avigilon Corporation could void the user's authority to operate this equipment.

Disposal and Recycling Information

When this product has reached the end of its useful life, please dispose of it according to your local environmental laws and guidelines.

Risk of fire, explosion, and burns. Do not disassemble, crush, heat above 100 °C (212 °F), or incinerate.

European Union:

This symbol means that according to local laws and regulations your product should be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. Some collection points accept products for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

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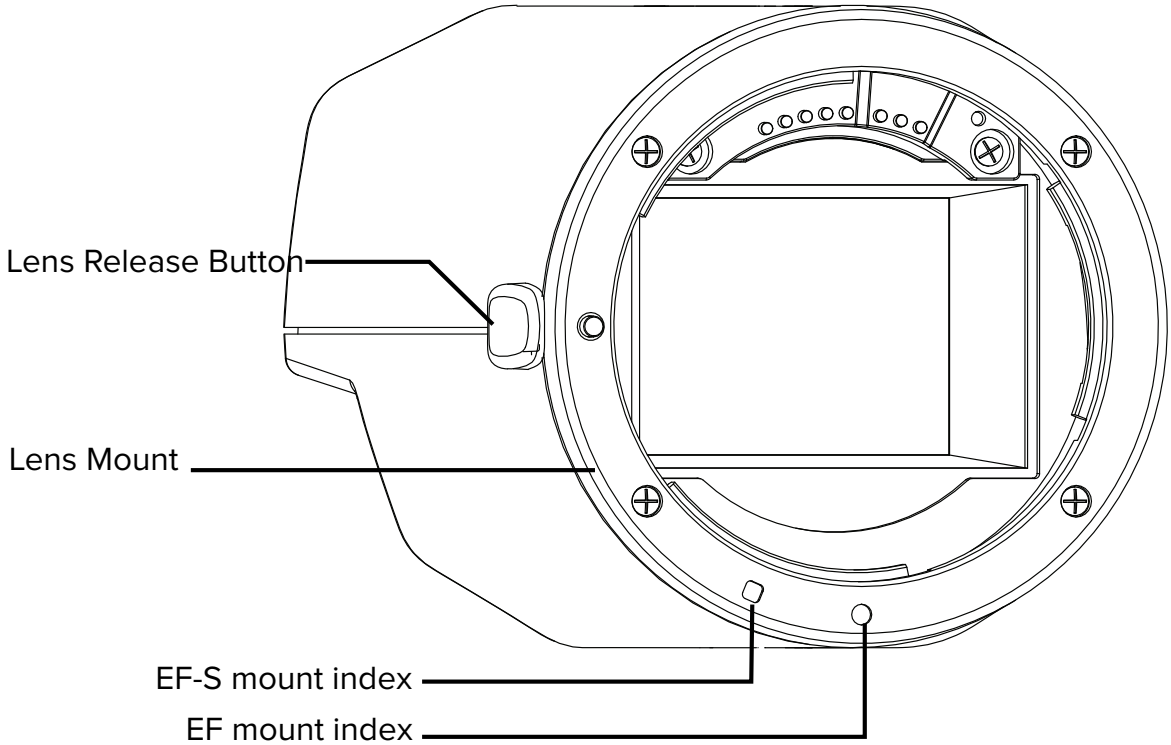
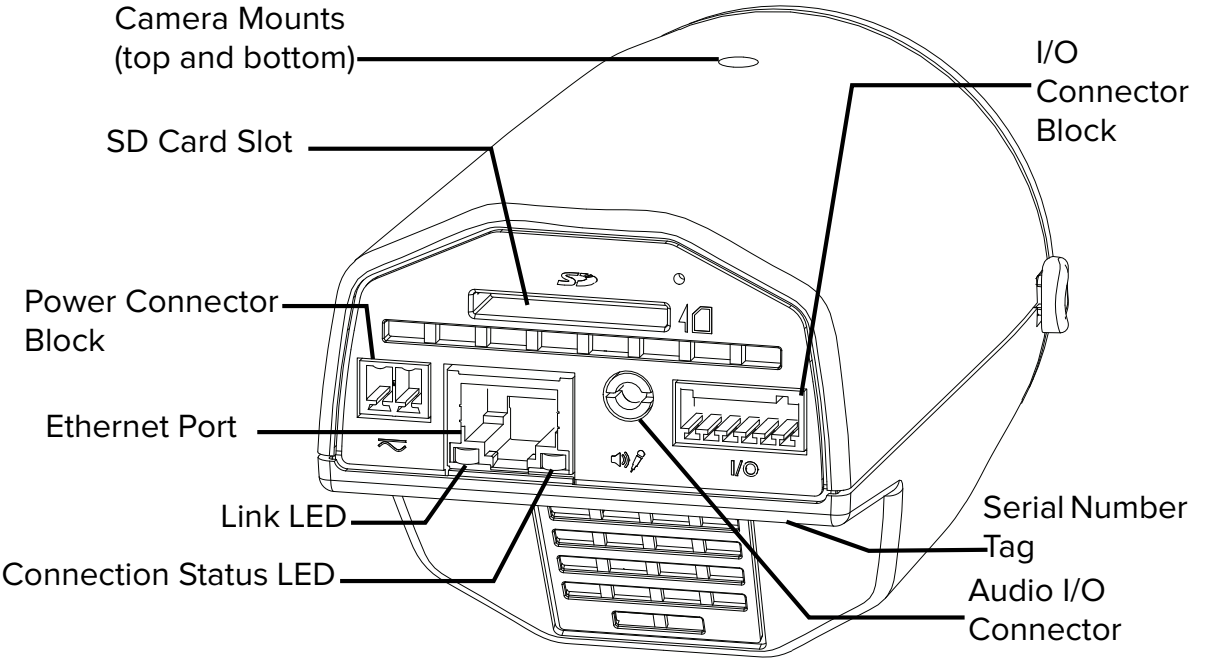
Overview

Front View



Feature	Description
Lens Mount	Accepts EF and EF-S lenses.
Lens Release Button	Releases the lens that is mounted on the camera.
EF-S mount index	A white mark on the lens mount to help you align an EF-S lens to the camera.
EF mount index	A red mark on the lens mount to help you align an EF lens to the camera.

Rear View



Feature	Description
Camera Mounts	Provides mounting points for the camera. Mounts accept 1/4”-20 UNC bolts commonly found on tripods and mounting brackets.
SD Card Slot	Accepts an SD card for onboard storage. See *(Optional) Configuring Onboard Storage* for more information.
Power Connector Block	Accepts a terminal block with either AC or DC power connection. DC input can be either polarity. Only required when Power over Ethernet is not available.
Ethernet Port	Accepts an Ethernet connection to a network. Server communication and image data transmission occurs over this connection. Also receives power when it is connected to a network that provides Power over Ethernet.
Connection Status LED	Provides information about device operation. See *LED indicators* for more information.
Link LED	Indicates if there is an active connection in the Ethernet port.
I/O Connector Block	Provides connections to external input/output devices. See *Connecting to External Devices* for more information.
Serial Number Tag	Product serial number and part number label.
Audio I/O Connector	Accepts a mini-jack connector (3.5 mm). See *Connecting to Microphones and Speakers* for more information.

Installation

Required Tools and Materials

- EF or EF-S mount lens
- Small slotted screwdriver with 5/64” or 2 mm blade width — for connecting power when not using Power over Ethernet.
- Mounting bracket, enclosure or tripod.

Camera Package Contents

Ensure the package contains the following:

- Avigilon High Definition IP Camera
- Power terminal block
- Dust cap
- I/O terminal block

Installation Steps

Complete the following procedures to install the camera.

1. *Mounting the Lens* on page 4
2. *Mounting the Camera* on page 5
3. *Connecting Cables* on page 6
4. *Assigning an IP Address* on page 6
5. *Accessing the Live Video Stream* on page 7
6. *Aiming and Focusing the Camera* on page 7
7. *(Optional) Configuring Onboard Storage* on page 8

Mounting the Lens

Important: Avigilon cameras require high-quality lenses to take full advantage of their advanced imaging capabilities. To avoid poor image quality caused by incorrect lens selection, only use lenses that are recommended by Avigilon for use with this camera model. For a list of lenses recommended for use with this camera model, contact your Avigilon dealer or representative.

NOTE: If the lens includes a collar, the collar must be used to prevent damage to the lens mount on the camera.

To mount a lens to the camera, complete the following steps:

1. If the lens includes a collar, install the collar to the lens first.
2. Remove the dust cap from the lens mount.
3. Align the lens to the appropriate index marker on the lens mount.
    - Red mark: EF mount index
    - White mark: EF-S mount index
4. Turn the lens clockwise until it locks into place.

To detach a lens, complete the following steps:

1. While pressing the lens release button, turn the lens counterclockwise until it stops.
2. Remove the lens from the camera.

Immediately mount another lens or a dust cap on the lens mount to prevent contamination.

Caution —

- Never touch the image sensor or any glass elements inside the lens mount. Only clean the image sensor with the recommended cleaning tools. See *Cleaning* for more information.
- Do not allow dust, moisture or any other foreign debris to enter the lens mount.
- Avoid leaving the image sensor exposed for extended periods of time.
- Always cover the image sensor with either a lens or a dust cap.

Mounting the Camera

1. Use the ¼”-20 UNC threaded holes to mount the camera on to a bracket, tripod or in an enclosure as required.
   - Mount the camera using the tripod collar on the lens.
   - If the lens does not have a tripod collar, use the threaded holes at the top and bottom of the camera.

Consult the installation instructions provided with the bracket, tripod or enclosure for detailed mounting instructions.

Caution — Always mount the camera from the lens tripod collar when the lens includes a collar.

Warning — Use only UL-listed mounting bracket suitable for the mounting surface and minimum 0.37 kg (0.8 lb) weight plus the weight of the attached lens.

Connecting Cables

Refer to the diagrams in the Overview section for the location of the different connectors.

To connect the cables required for proper operation, complete the following:

1. If there are external input or output devices that need to be connected to the camera (for example: door contacts, relays, etc), connect the devices to the camera I/O Terminals.
   For more information, see *Connecting to External Devices*.
2. If an external microphone or speaker needs to be connected to the camera, connect the devices to the camera audio connector.
   For more information, see *Connecting to Microphones and Speakers*.
3. Connect a network cable to the camera's Ethernet Port (RJ-45 connector).
   - The Link LED will turn on once a network link has been established.
4. Connect power using one of the following methods:
   - Power over Ethernet (PoE) Class 3 — If PoE is available, the camera LEDs will turn on.
   - External Power — Connect an external 12 VDC or 24 VAC power source to the power connector block.
     For more information, see *Connecting External Power*.
5. Check that the Connection Status LED indicates the correct state.
   For more information, see *LED Indicators*.

Assigning an IP Address

The camera automatically obtains an IP address by default. Once connected to a network, it attempts to locate and obtain an IP address

from a DHCP server. If this fails, Zero Configuration Networking (Zeroconf) is used to choose an IP address. When the IP address is set using Zeroconf, the IP address is in the 169.254.0.0/16 subnet.

The IP address settings can be changed using one of the following methods:

- Avigilon Camera Installation Tool software application.
- Camera's web browser interface: http://*<camera IP address>*/
- ARP/Ping method. For more information, see *Setting the IP Address through the ARP/Ping Method*.
- Network Video Management software application (for example, Avigilon Control Center).

NOTE: The default camera username is *admin* and the default password is *admin*.

Accessing the Live Video Stream

Live video stream can be viewed using one of the following methods:

- Avigilon Camera Installation Tool software application.
- Camera's web browser interface: http://*<camera IP address>*/.
- Network Video Management software application (for example, Avigilon Control Center).

NOTE: The default camera username is *admin* and the default password is *admin*.

Aiming and Focusing the Camera

Use the Avigilon Camera Installation Tool or camera web interface to aim and focus the camera. Consult the software user guide for more information.

1. If available, adjust the zoom using the appropriate ring on the lens.

2. If the lens has an auto focus (AF) mode, set the lens switch to the AF position to allow the camera web interface or Avigilon Camera Installation Tool to control the camera's focus.
   a. In the Image and Display settings page, use the **Auto Focus** button to focus the lens.
   b. If the desired focus position was not achieved, use the focus near and far buttons to adjust the focus.

(Optional) Configuring Onboard Storage

To use the camera's onboard storage feature, you must insert an SD card into the SD card slot.

It is recommended that the SD card have a capacity of 64 GB or more, and a write speed of class 10 or better. If the SD card does not meet the recommended capacity or write speed, the performance of the onboard storage may suffer and result in the loss of frames or footage.

Ensure the SD card is designed for continuous video recording or the SD card life expectancy may be adversely affected.

1. Insert an SD card into the camera.

Caution — Do not force the SD card into the camera or you may damage the card and the camera. The SD card can only be inserted in the direction shown on the camera.

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2. Access the camera's web interface to enable the onboard storage feature.

   For more information, see the *Avigilon High Definition H.264 Camera Web Interface User Guide*.

For More Information

Additional information about setting up and using the device is available in the following guides:

- *Avigilon Camera Installation Tool User Guide*
- *Avigilon Control Center Client User Guide*
- *Avigilon High Definition H.264 Web Interface User Guide*

The manuals are available on the Avigilon website: http://avigilon.com/support-and-downloads.

Cable Connections

Connecting External Power

NOTE: Do not perform this procedure if Power over Ethernet (POE) is used.

If PoE is not available, the camera needs to be powered through the removable power connector block. Refer to the diagrams in this guide for the location of the power connector block.

The device can be powered from 12 VDC or 24 VAC. The power consumption information is listed in the product specifications.

To connect power to the power connector block, complete the following steps:

1. Remove the power connector block from the device.
2. Remove the insulation from ¼” (6 mm) of the power wires. Do not nick or damage the wires.
3. Insert the two power wires into the two terminals on the power connector block. The connection can be made with either polarity.
   Use a small slotted (5/64” or 2 mm blade width) screwdriver to loosen and tighten the terminals.
4. Attach the power connector block back into the receptacle on the device.

Warning — This product is intended to be supplied by a UL Listed Power Unit marked “Class 2” or “LPS” or “Limited Power Source” with output rated 12 VDC or 24 VAC, 10 W min. or PoE rated 48 VDC, 10 W min.

Connecting to External Devices

External devices are connected to the camera through the I/O terminal. The pinout for the I/O terminal is shown in the following table and diagram.

Table: External I/O Connector

Pin	Description
1	Ground
2	RS-485B
3	RS-485A
4	Relay input
5	Relay output
6	+5 VDC, 200 mA max. output for relay drive

NOTE: The 5 V connection can be used to energize a relay coil with up to 200 mA. If more than 200 mA is required, an external power supply up to 25 VDC at 120 mA can be used.

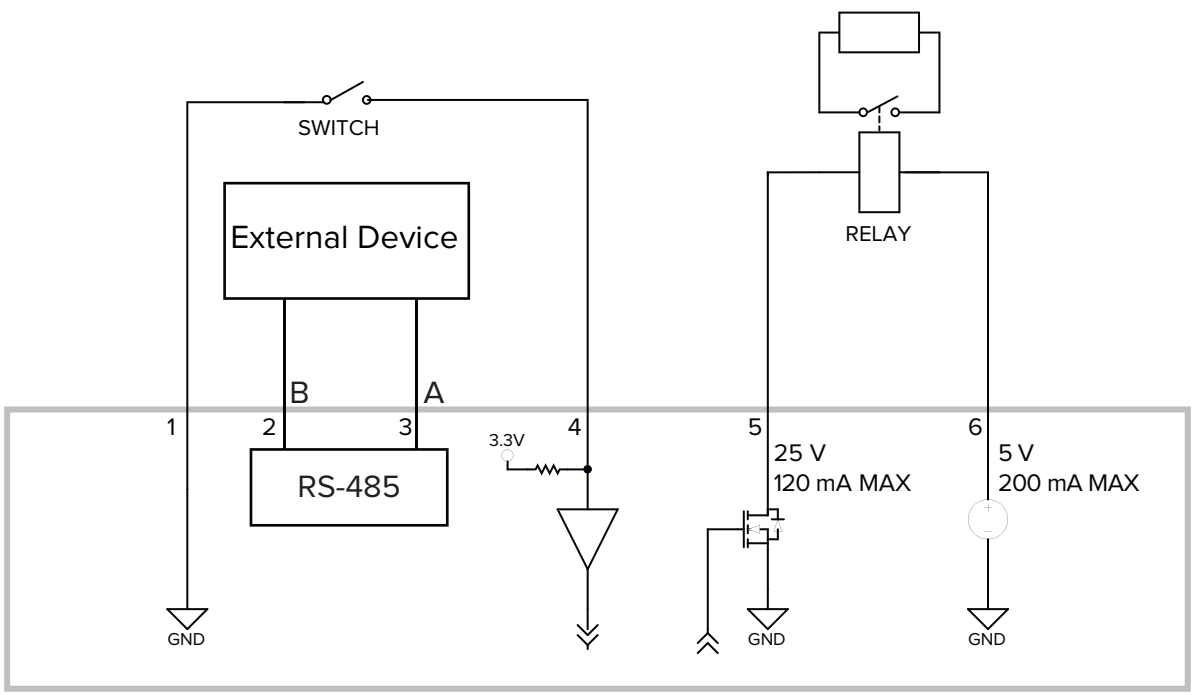

Figure: External I/O schematics and example application.

Connecting to Microphones and Speakers

The camera can be connected to an external microphone and speaker through the audio connector. The connector is a mini-jack (3.5 mm), and the pinout for it is shown in the following diagram.

NOTE: The camera only supports line level mono audio input.

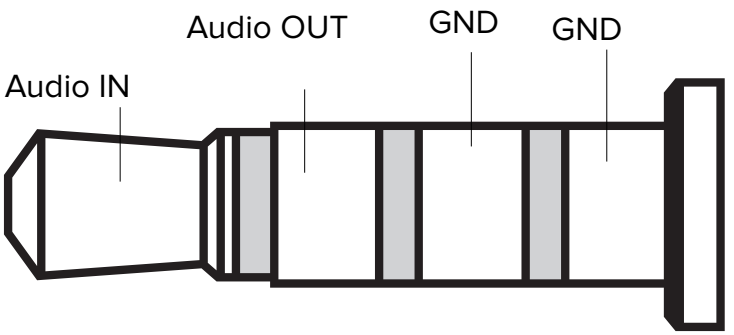

Figure: Mini-jack audio connector.

LED Indicators

Once the camera is connected to the network, the Connection Status LED will display the camera's progress in connecting to the Network Video Management software.

The following table describes what the LEDs indicate:

Table:LED Indicators

Connection State	Connection Status LED	Description
Obtaining IP Address	One short flash every second	Attempting to obtain an IP address.
Discoverable	Two short flashes every second	Obtained an IP address but is not connected to the Network Video Management software.
Upgrading Firmware	Two short flashes and one long flash every second	Updating the firmware.
Connected	On	Connected to the Network Video Management software.

Reset to Factory Default Settings

If the camera no longer functions as expected, you can choose to restore the camera to its factory default settings.

Use the firmware revert button to reset the camera.

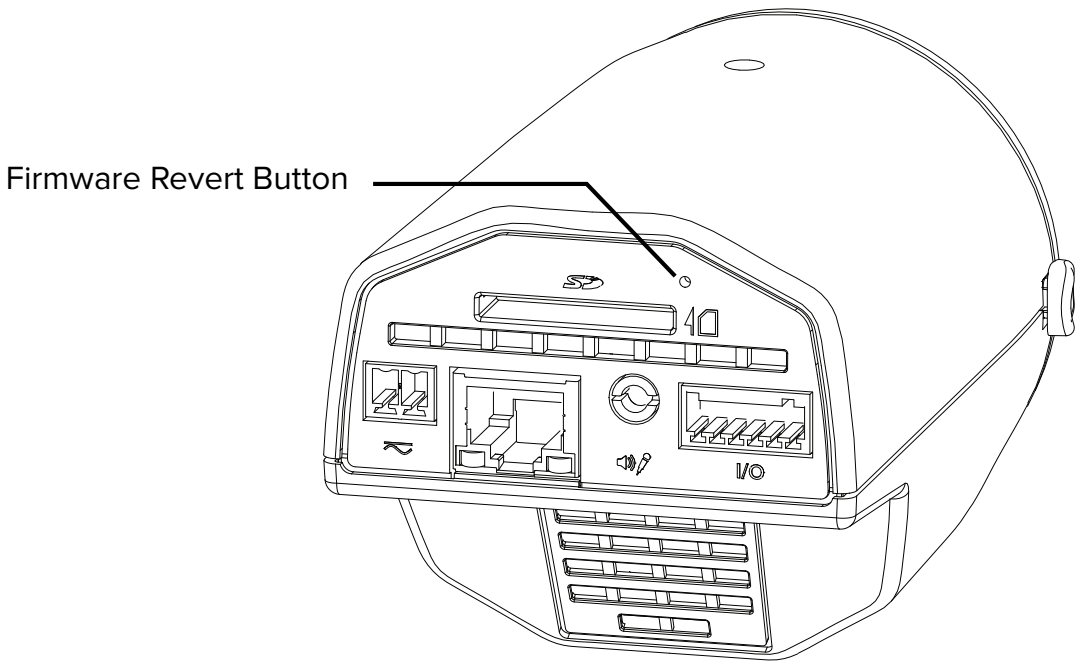

Figure: The firmware revert microswitch on the rear of the camera.

1. Disconnect power from the camera.
2. Using a straightened paperclip or similar tool, gently press and hold the firmware revert button.
3. While continuing to hold the button, power the device. Release the button after three seconds.

Caution — Do not apply excessive force. Inserting the tool too far will damage the device.

Setting the IP Address Through the ARP/Ping Method

Complete the following steps to configure the camera to use a specific IP address:

1. Locate and copy down the MAC Address (MAC) listed on the Serial Number Tag for reference.
2. Open a Command Prompt window and enter the following commands:
   a. `arp -s <New Camera IP Address> <Camera MAC Address>`
   For example: `arp -s 192.168.1.10 00-18-85-12-45-78`

   b. `ping -l 123 -t <New Camera IP Address>`
   For example: `ping -l 123 -t 192.168.1.10`
3. Reboot the camera.
4. Close the Command Prompt window when you see the following message:
   `Reply from <New Camera IP Address>: ...`

Cleaning

Image Sensor

The image sensor is protected from contamination by protective glass. However, the protective glass can be contaminated by dust and other debris.

To clean the protective glass, perform the following steps:

1. Remove the lens or dust cap.
2. Using a photographic-grade bulb-type blower (commercially available), blow away any dust or foreign debris from the protective glass inside the lens mount.
3. Immediately replace the lens or dust cap.

If the protective glass is still not clean, obtain an image sensor cleaning swab and solution. Follow the cleaning instructions provided by the manufacturer.

Avigilon recommends using the Type 2 Sensor Swab™ and Eclipse® cleaning solution made by Photographic Solutions, Inc. For a worldwide list of dealers, visit the Photographic Solutions, Inc. website at www.photosol.com.

Caution —

- Never touch the image sensor or any glass elements inside the lens mount. Only clean the image sensor with the recommended cleaning tools. See *Cleaning* for more information.
- Do not allow dust, moisture or any other foreign debris to enter the lens mount.
- Avoid leaving the image sensor exposed for extended periods of time.
- Always cover the image sensor with either a lens or a dust cap.

Body

Use a dry or lightly dampened cloth to clean the camera body.

Caution — Do not use strong or abrasive detergents when cleaning the camera body.

Specifications

Camera

Audio Input/Output	Line level, mini-jack (3.5 mm)
Onboard Storage	SD/SDHC/SDXC slot - minimum class 6; class 10, 64GB or better recommended

Network

Network	100Base-TX
Cabling Type	CAT5
Connector	RJ-45
Security	Password protection, HTTPS encryption, digest authentication, WS authentication, user access log
Protocols	IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMP, ICMP, DHCP, Zeroconf, ARP
Streaming Protocols	RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP,RTP/RTSP/HTTPS/TCP, HTTP

Mechanical

Dimensions L x W x H	109 mm x 73 mm x 68 mm 4.3” x 2.9” x 2.7”
Weight	0.37 kg (0.8 lbs)
Camera Mount	¼”-20 UNC (top and bottom)

Electrical

Power Consumption	10 W — camera only
Power Source	VDC: 12 V +/-10%, 10 W VAC: 24 V +/-10%, 14.3 VA PoE: IEEE802.3af Class 3 compliant
Power Connector	2-pin terminal block

Environmental

Operating Temperature	-10 °C to +50 °C (14 °F to 122 °F)
Storage Temperature	-10 °C to +70 °C (14 °F to 158 °F)

Certifications

Safety	UL 60950 CE	CSA 60950 ROHS	EN 60950-1 WEEE	
Electromagnetic Emissions	FCC Part 15 Subpart B Class B EN 55022 Class B		IC ICES-003 Class B	
Electromagnetic Immunity	EN 55024 Class B EN 61000-4-4	EN 61000-4-5	EN 61000-4-2 EN 61000-4-6	EN 61000-4-3 EN 61000-4-11

Limited Warranty & Technical Support

Avigilon warrants to the original consumer purchaser, that this product will be free of defects in material and workmanship for a period of 3 years from date of purchase.

The manufacturer's liability hereunder is limited to replacement of the product, repair of the product or replacement of the product with repaired product at the discretion of the manufacturer. This warranty is void if the product has been damaged by accident, unreasonable use, neglect, tampering or other causes not arising from defects in material or workmanship. This warranty extends to the original consumer purchaser of the product only.

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This Limited Warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

Warranty service and technical support can be obtained by contacting Avigilon Technical Support by phone at 1.888.281.5182 or via email at support@Avigilon.com.